

Rhode Island Nonpoint Source Pollution Management Program

Report of Activities October 1, 2012 – September 30, 2014 (FY 2013 and FY 2014)



Bioretention Practices and Rain Gardens
Installed with Section 319 Project Funds

**Rhode Island Department of Environmental Management
Office of Water Resources**

RI Nonpoint Source Management Program

Report of Activities

October 1, 2012 – September 30, 2014

Protecting and restoring the waters of the state – surface water, groundwater and wetlands – from pollution due to nonpoint sources continues to be an important focus of state water pollution control programs in Rhode Island. Managing nonpoint sources (NPS) of pollution, such as stormwater runoff and failing septic systems, is challenging. Available monitoring data reveals nonpoint pollution as a widespread problem affecting every watershed in the state. Nonpoint sources of pollution are suspected of contributing to the impairments in a majority of the surface waters included on the state's impaired waters list, also known as the 303(d) list.

To prevent and combat NPS pollution, the Rhode Island Department of Environmental Management (DEM) Nonpoint Source Pollution Management program encourages various actions by state and local governments, businesses, watershed groups and individual landowners. The DEM NPS program activities are guided by the RI Nonpoint Source Pollution Management Plan (2014) as well as federal Environmental Protection Agency (EPA) requirements governing Clean Water Act Section 319 funds. The following report describes the accomplishments of DEM and its partners with respect to nonpoint source pollution for fiscal years 2013 and 2014 (October 1, 2012 – September 30, 2014). This includes activities supported by Section 319 funds awarded via the Performance Partnership Agreement with EPA, as well as related activities supported by other funding sources.

Along with point source pollution controls, the NPS program is an essential part of RI's overall effort to restore and protect water quality. DEM remains focused on the state's major sources of NPS pollution: stormwater runoff and septic systems. While efforts to enhance state programs are pursued, it will be equally important for the state to continue to assist municipalities in their efforts to actively implement local wastewater and stormwater management programs.

Updated Nonpoint Source Management Plan

Development of a revised RI Nonpoint Source Management Plan was a major priority for DEM during this reporting period. EPA's 2013 NPS Program Guidelines required that each state update its NPS Management Plan and include the required elements specified in the EPA Guidelines. RIDEM's updated Nonpoint Source Management Plan, approved by EPA in September 2014, represents a comprehensive update of the previous version of the Plan prepared in 1995. Much of what was put forth in the 1995 NPS Plan has been accomplished and it was time to set a new course for NPS pollution management in RI.

In developing the Nonpoint Source Management Plan, DEM worked with the Department of Administration and an Advisory Committee in developing a separate long-term state Water Quality Plan that addresses both point and nonpoint sources of pollution as well as other stressors known to threaten or degrade water quality and aquatic habitat in RI. DEM NPS and other Water Resources staff have been the coordinators and primary authors of this Water Quality Plan. The Advisory Committee consists of representatives from federal, state and local government, academia and non-profit organizations. The broader Water Quality Plan, currently still in development, will be adopted as a new element of the State Guide Plan. The approved RI

Nonpoint Source Management Plan was derived in large part from material developed by DEM and the Advisory Committee for the Water Quality Plan.

The Rhode Island NPS Program is guided by the following long-term goals that apply to water quality management in Rhode Island:

- Protect the existing quality of RI's waters and aquatic habitats and prevent further degradation due to NPS pollution; and
- Restore the quality of waters and aquatic habitats degraded by NPS pollution to conditions that support the intended uses of these waters and habitats.

The Plan outlines a comprehensive approach for addressing NPS pollution across all levels of government, including:

- The programs, strategies and resources state agencies and partners use to address priority NPS water pollution problems;
- A process for prioritizing watersheds for protection and restoration;
- The priority NPS management actions to be undertaken during the next five years to make progress toward water quality protection and restoration goals; and
- Specific milestones to measure implementation of the plan for the next five years.

As the lead state agency for water quality management and water pollution control, DEM has the responsibility for developing and implementing this Nonpoint Source Management Program Plan. However, there are many federal, state, quasi-state, municipal, non-governmental, academic, and non-governmental entities that contribute in significant ways to the management of NPS pollution in Rhode Island.

Local Grants for NPS Pollution Management

A primary ongoing activity of the DEM NPS Program is the distribution and management of grants from federal Clean Water Act Section 319 funds to local entities.

Completed Grant Projects

The seven projects that were completed in federal FY 2013 and FY 2014 are briefly described below. It should be noted that the "grant amount" indicated in this report for the projects is not the total cost of the project. Grant recipients are required to provide a minimum match in funds or in-kind services. This required minimum match ranges from 10% to 40% (depending on the type of project) of the grant project budget (grant plus match). Completion of the recipient's desired project occasionally requires more than the minimum match.

Bradford Streetscape Subsurface Gravel Wetland Design Project

\$16,470 from Section 319 FY 2008 funds

Project completed in FY 2013

In 2002, the Town of Westerly, RI secured an enhancement grant from the RI Department of Transportation (RIDOT) for a streetscape and beautification project in Bradford Village. The RIDOT's original planned stormwater treatment as a part of that project included only a detention basin that would provide minimal water quality treatment. Stormwater flows to the Pawcatuck River, which is impaired by pathogens, therefore the Town wished to enhance those stormwater treatment designs. The town was awarded a \$60,000 Section 319 grant to design and build a wet vegetated treatment system to treat the stormwater from the Bradford Village section of Westerly.

The plan for a wet vegetated treatment system was brought before RIDEM's Water Quality/Wetland Restoration Team for pre-application assistance prior to permitting. Unfortunately, due to resource constraints in the Town of Westerly, the scope of the project was reduced and final permitting and construction of the project was deferred. The Town of Westerly was paid \$16,470 for expenses associated with design work and the remainder of the funding originally assigned for this project was reassigned to other active projects. The Town of Westerly has indicated that it plans to pursue construction of the BMP in the future.

Bristol Town Beach Stormwater Pipe Retrofit Construction Project

\$198,000 from Section 319 funds -- \$195,925 from FY 2008; \$2,075 from FY 2009

Project completed in FY 2013

Bristol Town Beach is located on Narragansett Bay immediately to the north of Colt State Park in Bristol, RI. It had a significant history of beach closures resulting from bacterial contamination after rainfall events, as documented by the Rhode Island Department of Health's Beach Program. The Town of Bristol undertook a multi-pronged approach to address water quality concerns at Bristol Town Beach, including addressing the quality and volume of runoff from impervious parking areas at the Town Beach and the adjacent Sports Complex.

However, there was an existing storm drainage system from a large residential area immediately north of the beach that discharged adjacent to the beach through a 36" concrete pipe and a 12" corrugated metal pipe. A prior Section 319 project provided funding for the design and permitting of a wet vegetated treatment system to divert that portion of the stormwater flow that carries the bulk of the pollutants (the "first flush" or "water quality volume") and treat it before returning it to the piped outfall. This project funded the construction of the designed wet vegetated treatment system. Because this system is readily visible and accessible to visitors of the Town Beach, an interpretive sign explaining how the system works was installed.

Construction of this project, in conjunction with other projects at the Beach funded by a Supplemental Environmental Project, and a loan from the RI State Revolving Loan Fund, have resulted in a drop in the number of annual beach closure days from an average of 11-13 days per year to an average of 1-2 days per year. This wet vegetated treatment system will annually remove approximately 225 pounds of nitrogen, 66 pounds of phosphorus and 3.1 tons of sediment.



Gravel Wet Vegetated Treatment
System at Bristol Town Beach

Coventry: East Shore Drive Stormwater Quality Improvements

\$39,000 from Section 319 funds -- \$27,243 from FY2009, \$11,757 from FY 2007

Project completed in FY 2013

The northeastern shore of Tiogue Lake in Coventry, RI has several steep residential roads leading down to the lake. Stormwater moves rapidly downslope crossing East Shore Drive and creating sediment plumes in the lake. The Town of Coventry performed a feasibility study and constructed BMPs at four locations to treat stormwater before it discharges to the Lake:

- North Road – Installed a sediment forebay. Some vegetation was removed and the site re-stabilized.
- Berkshire Road – Catch basin with 4' sump was installed. Area was regraded to channel water to the catch basin. The catch basin discharges to a riprap swale.
- North of Mohawk Street – An existing catch basin was replaced with a new deep sump catch basin. A bioretention basin, an infiltration system and a vegetated filter strip were installed to take flow from the catch basin.
- Mohawk Street – An existing catch basin was replaced with a new deep sump catch basin. The catch basin discharges to a grass swale.

All of this work was done in the public right of way. With the installation of these BMPs, approximately 0.2 tons of road sand, 5.1 pounds of nitrogen and 1 pound of phosphorus per year no longer enter Tiogue Lake.

Coventry: Sandy Bottom Road Wetland Restoration Project

\$60,000 from Section 319 FY 2008 funds

Project completed in FY 2013

The Town of Coventry owns property along the Pawtuxet River that intersects with Sandy Bottom Road just north of Tiogue Lake. The Town had planned for a number of years to renovate this property into a public park, with walking trails through the woods and a public access boat ramp on the Pawtuxet River. In order to accomplish this renovation, the town needed to remove a stand of the invasive phragmites reed (*phragmites australis*) that had spread throughout the wetlands along Sandy Bottom Road to restore conditions in this riparian buffer area.

The Town of Coventry was awarded a grant to remove the phragmites and to treat the stormwater that enters the wetland along Sandy Bottom Road. The bioretention system that was constructed will annually remove approximately 0.2 tons of sediment, 1.5 pounds of nitrogen and 0.5 pounds of phosphorus. As match, the Town of Coventry is required to chemically treat the phragmites using a qualified herbicide applicator for a minimum of three years or until the phragmites is under control and to spot treat any phragmites that might appear after that time.

Middletown: Feasibility Study for the Attenuation of Phosphorus in Stormwater in North Easton Pond

\$27,900 from Section 319 FY 2009 funds

Project completed in FY 2014

North Easton (aka Green End) Pond in southern Middletown is one of 9 reservoirs supplying drinking water to the Newport Water System. The watershed for the Pond is almost entirely within the town of Middletown. North Easton Pond is listed on RI's 303(d) list as impaired for phosphorus. A TMDL was developed that calls for an 80% reduction in phosphorus loads to the Pond to meet water quality standards.

The Town of Middletown was awarded a Section 319 grant to survey the watershed to determine the feasibility of attenuating phosphorus loads, primarily through upland infiltration of stormwater throughout the watershed. The Town's consultant prepared the "North Easton (Green End) Pond Stormwater Attenuation and Source Reduction Strategy" that provides potential locations for stormwater BMPs, a cost benefit analysis for each BMP and recommendations for the Town to follow in order to reduce phosphorus loadings to North Easton Pond.

North Kingstown: Sawmill Pond Watershed Restoration Project

\$240,589 from Section 319 FY 2009 funds

Project completed in FY 2014

Sawmill Pond in the Davisville neighborhood of North Kingstown, RI, lies within the Sandhill Brook watershed. The Pond's watershed covers approximately 1.8 square miles from the pond's outlet to the headwaters of Sandhill Brook. Sandhill Brook is a tributary to the Hunt River, which discharges to Narragansett Bay and is listed on RI's 303(d) list as impaired due to excess fecal coliform. Stormwater runoff, waterfowl, and wildlife are the major sources fecal contamination.

Much of the buildable land within the Sawmill Pond watershed has been developed with a variety of uses including large-scale commercial operations, residential subdivisions, light industrial uses, and roadway/railway infrastructure. Concerns about the ecological health of the watershed prompted the Town of North Kingstown to explore management options that would improve the stream and riparian habitat and to develop a watershed management plan. The completed watershed plan identified many potential retrofit locations for stormwater treatment and impervious surface disconnection, and opportunities for stream corridor and riparian wetland restoration.

This Section 319 project funded the construction of three suites of retrofits to treat stormwater runoff from the Davisville Elementary School, the Davisville neighborhood, and the public park abutting Sawmill Pond; as well as a project for rain garden education, design and installation.

- At Davisville Elementary School, the Town built a dry swale along the parking area, and bioretention areas.

- At the adjacent public park, the Town constructed a unique step-pool system with upflow bioretention areas that step down the steep slope from the parking area to Sawmill Pond.
- In the Davisville neighborhood, the Town recruited 10 households to build rain gardens on their properties with signage that identified the rain gardens as stormwater treatment systems.

This combination of systems spread throughout the Sawmill Pond watershed will reduce fecal coliform loadings to Sawmill Pond, and in addition, these BMPs will result in a reduction of approximately 39 pounds of nitrogen, 4 pounds of phosphorus and 2.24 tons of sediment from annually entering Sawmill Pond.



Step-pool Stormwater Treatment System

Providence Water Supply Board: Rockland Pipe Stream Riparian Restoration

\$15,000 from Section 319 FY 2008 funds

Project completed in FY 2014

The Peabody (aka Rockland) dam on Rockland Stream in Scituate, RI in the Scituate Reservoir watershed was originally installed to create a mill pond. A pipe (“Rockland Pipe”) was installed alongside the dam as part of the millworks. After the mill shut down, the property was taken over by the Providence Water Supply Board as part of their Scituate Reservoir watershed protection efforts. The pipe was left in place after the mill was shut down and water continued to run through it; however, it deteriorated over time and the flow that it once contained started exfiltrating, causing significant stream bank erosion and braiding of the channel.



Stream before BMP built



Stream after BMP built

Providence Water Supply was awarded a Section 319 grant of \$15,000 to restore the streambank after removal of the deteriorated pipe that ran along Rockland Stream. The restoration consisted of excavation of the damaged stream channel and placement of native rock and riprap to simulate a natural stream channel. Root wads, coir logs and live fascines were placed along the channel sides and a riparian buffer was planted consisting of native groundcover, shrubs and trees. This restored streambank will result in 1.2 pounds of nitrogen, 0.4 pounds of phosphorus and 0.6 tons of sediment no longer entering Rockland Stream.

Active Grant Projects

Active Section 319 grant projects as of September 30, 2014 are listed below:

Grantee	Grant Project	Affected Watershed	Grant Amount – Federal Fiscal Yr
Bristol	Gutteras School – Green Infrastructure Retrofit; design/build.	Silver Creek – Bristol Harbor	\$275,000 -- 11/12
Middletown	Maidford River Bank Stabilization; design/build.	Maidford River	\$40,000 -- 12
RI Conservation Association	Goose Control – Mashapaug Pond and Statewide	Statewide	\$61,080 -- 11
RI DOT	Construction of Stormwater BMP at Two Mile Corner, Middletown; design/build	Bailey Brook -- North Easton Pond	\$265,000 -- 10
Scituate	North Scituate Village – Green Infrastructure Retrofit; design/build.	Scituate Reservoir	\$200,000 -- 11
Warwick	Brush Neck Cove Stormwater Infiltration	Brush Neck Cove -- Greenwich Bay	\$50,000 -- 12
West Warwick	Former West Warwick Town Landfill Closure	Pawtuxet River	\$20,000 -- 11

In July 2014, DEM issued a Request for Proposals for the next round of water quality restoration grants using funds from Section 319 FY 2013 and 2014 (approximately \$400,000) and also from the state Narragansett Bay and Watershed Restoration Fund (approximately \$2.8 million). Consistent with EPA Section 319 grant guidelines issued in April, nonpoint project funds can only be distributed to grantees for implementing a project that is consistent with a watershed plan that meets the minimum federal watershed plan requirements. Therefore, the RFP for the Section 319 funds was targeted to solicit for projects to implement eligible actions in the following plans:

- Bristol – Kickemuit River Watershed Plan (Plan completed November 2012)
- Barrington – Palmer – Warren Rivers Watershed Plan (Plan completed November 2012)
- Aquidneck Island Watershed Planning Area (Priority planning area wherein planning activities were initiated in FY 2015)

A public workshop to review the RFP process and clarify guidance for potential grant applicants for both the Section 319 and the State funds was held on August 6, 2014 at which 30 potential grantees attended. Proposals were due to DEM by October 10, 2014.

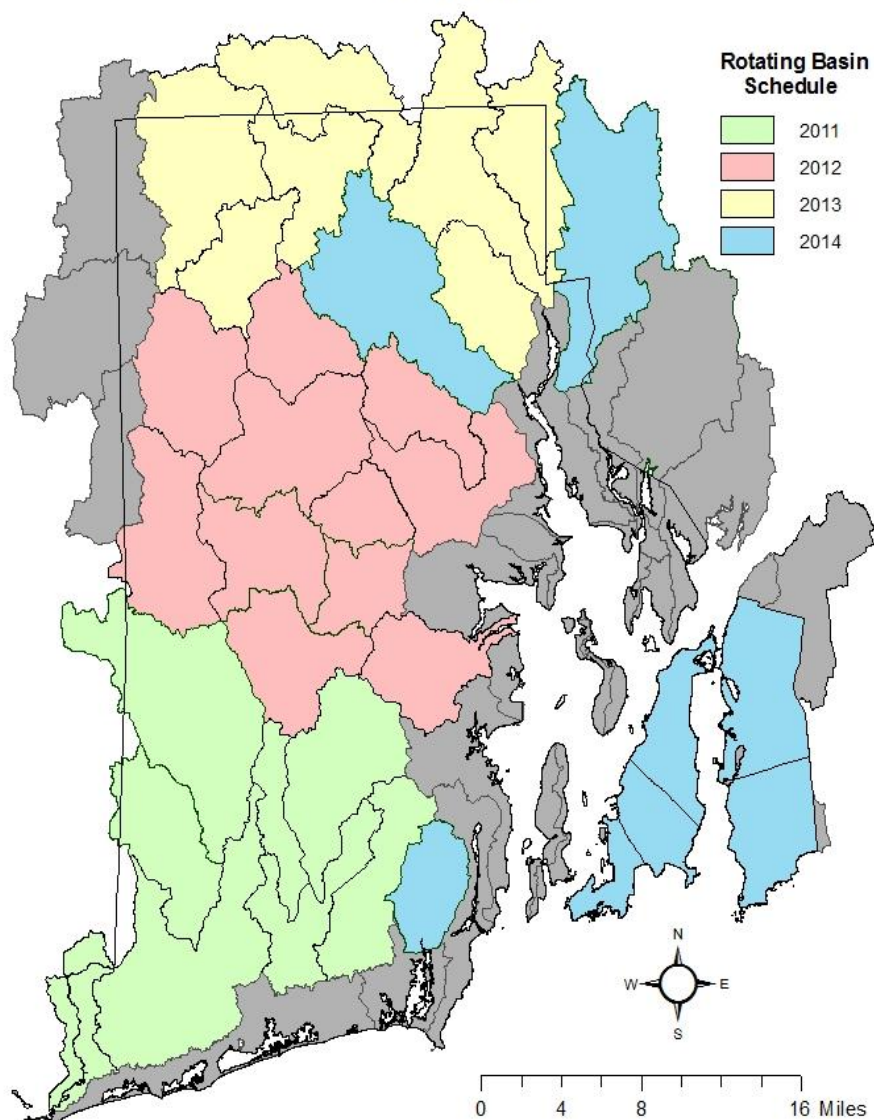
Ambient Monitoring – Identifying NPS Pollution in Surface Waters

To help assess the effects of NPS pollution, the DEM NPS program continues to contribute to the implementation of the statewide RI Water Monitoring Strategy by providing funding that supports volunteer-based monitoring of lakes and biological monitoring in rivers and streams. This monitoring is essential to assessing whether the state's freshwaters support healthy aquatic communities.

DEM's partnership with the URI Watershed Watch Program, from 1999 to the present, supports seasonal monitoring by volunteers that provided the primary source of data for DEM assessment of 74% of lake acres as reported in the 2012 Integrated Water Quality Monitoring and Assessment Report. The data is expected to be used in the updated statewide assessment being prepared for 2016. As there are no point discharges of sanitary wastewater authorized for lakes in the state, water quality pollution problems in lakes are largely attributable to nonpoint source pollution sources.

DEM's biological monitoring of rivers and streams focuses on sampling for macroinvertebrates. This biological community has proven to be a reliable indicator of water quality and habitat condition that reflects the cumulative effects of various stressors, including nonpoint source pollution. Sampling and taxonomic identification is performed by a contractor (currently ESS Group, Inc.) for DEM at selected stations annually. Since 2004, the sampling has been targeted to support the implementation of the rotating basin approach for assessing rivers and streams. About 200 stations have been sampled via this program, providing a statewide dataset that supports a more complete assessment of water quality conditions in rivers and streams. Sixty-five percent of total river miles in RI were reported as assessed for one or more designated use in the 2012 Integrated Report. The data are used to identify biodiversity impairments in rivers and streams. DEM has found such impairments to be widely distributed in the state and often associated with nonpoint sources of pollution. Figure 1 reflects which watersheds were sampled under this monitoring strategy during the second five-year basin rotation. In 2013, sampling was carried out in the Blackstone River watershed. In 2014, DEM sampled the following watersheds/planning areas: Aquidneck Island, Buckeye Brook, Greenwich Bay, Jamestown, Saugatucket River, Ten Mile River and the Woonasquatucket River.

RIDEM Ambient River Monitoring Program
Rotating Basin Schedule
2011-2014



*Although watershed basin lines extend beyond state borders, targeted sites were located within state boundaries.

Figure 1. River Basin Monitoring

Watershed Planning

As reflected in the updated Nonpoint Source Management Plan, RI is placing renewed emphasis on a watershed-based approach to managing water quality. Long recognized as being the most effective means to protect and restore water resources, a watershed-based approach recognizes that watersheds transcend political boundaries. To strengthen implementation of this approach, DEM is committing to developing watershed plans for the 26 planning areas designated across Rhode Island (see Figure 2).

A watershed plan serves as a mechanism to integrate the full range of actions recommended for protecting and restoring water quality and aquatic habitat within a given watershed. The plans will include actions pertaining to nonpoint and point sources of pollution. The watershed plan provides an opportunity to identify partners and to collaborate across all levels of the public and private sectors to determine and implement actions that are supported by sound science.

The goal for the watershed plan is to:

- Describe the water resources and their water quality status;
- Describe the current protection and restoration actions being carried out in the watershed;
- Create an Action Plan with specific prioritized actions to protect and restore water quality identified and the responsible entity and timeframe designated. Actions identified in TMDLs and other plans will be compiled with additional actions added as necessary;
- Establish coordinating mechanisms between towns and others for plan implementation; and
- Promote public understanding about the values of clean water and the actions necessary to achieve clean water goals.

While intentionally broad in scope, the plans will incorporate the required nine elements of a watershed-based plan specified by EPA guidance mentioned earlier. The planning process is ongoing. Once the watershed plan is adopted, success toward implementing the plan is regularly evaluated and the plan must then be updated accordingly.

DEM's approach to watershed planning is two tiered. Tier 1 will be a webpage for each of the watershed planning areas presenting a summary of information available about that watershed with links to documents and other websites for more information. DEM believes this will be an important tool for engaging the public on a watershed basis. The goal is to activate this webpage in 2015 in conjunction with an agency-wide update of the DEM website.

Tier 2 will be the development of a watershed plan for each of the 26 watershed planning areas, building on the material collected for the webpage and existing documents, particularly the TMDL reports. These watershed plans, which will satisfy the EPA requirements for watershed based plans, will present in a clear, concise format, a comprehensive overview of the watershed that the public and policy makers at all levels can use to identify key watershed characteristics. Most importantly, the plans will identify actions that are necessary to restore and protect water

quality. Recognizing the role of municipal government in managing nonpoint sources of pollution, the emphasis will be on identification of appropriate local actions in the areas of improving stormwater management, local land use regulations, and onsite wastewater management, as well as other watershed specific issues.

A technical assistance project was initiated in FY2010 utilizing EPA's consultant, FB Environmental, to work with DEM on the development of 2 watershed plans as a pilot for DEM's approach in the Barrington-Palmer-Warren Rivers watershed and the Bristol-Kickemuit River watershed. This planning effort actively engaged stakeholders at several stages in the process, including initial kick-off meetings, meetings to provide specific input and to review draft material. Stakeholders included town board/council members, town/regional planners, natural resource professionals, non-profit organizations, and watershed landowners.

Drafts of the two Plans were posted for review in April 2012 and all interested stakeholders were notified. A public meeting was held for each Plan in May, one in Bristol, RI and one in Barrington, RI. At these meetings, after a presentation of the Plans, there was a group exercise to prioritize proposed action items and to identify additional actions in the watershed. These Plans were finalized in November 2012.

DEM has identified the following Watershed Planning Areas targeted for Plan development by DEM NPS Staff:

- Aquidneck Island. Although the Island has several watersheds that drain to surrounding Narragansett Bay waters, one plan will be prepared that will address all Island water quality issues. This planning effort is being timed to coordinate with the development of TMDLs for Newport's drinking water supply impoundments.
- Narrow River Watershed. Over the years, the state and the municipalities have invested a great deal of funds to restore water quality in the Narrow River.
- Scituate Reservoir Watershed. This effort will coordinate with the Providence Water Supply Board's intent to develop a very detailed action plan for that portion of the overall planning area that drains into the Regulating Reservoir (northeast portion of the watershed).
- Wood - Pawcatuck Watershed. This effort will coordinate with the use of federal funds to develop a Pawcatuck River Watershed Flood and Storm Damage Resiliency Management Plan.

RI Rivers Council

One of DEM's priorities in developing watershed plans is to support the efforts of local watershed organizations. Active local watershed organizations fulfill a critical role in stewardship in their watersheds by raising awareness, coordinating and implementing projects and advocating for protection and restoration actions.

RI state law (RIGL 46-28) established the RI Rivers Council to coordinate and support activities of local watershed associations. The primary duties of the Council are to:

- Advise state agencies and municipalities concerning programs and measures to protect and improve river and watershed quality;
- Designate watershed councils as bodies corporate and politic with specific powers, duties and responsibilities, including "standing" before local and state agencies and courts;
- Conduct an annual grants program to advance the work of designated watershed councils; and
- Foster public involvement in river planning and decision-making through public education and promotional activities.

Watershed organizations vary in capacity from those with paid professional staff to solely volunteer organizations. Nine watershed organizations have been designated by the Council in RI. Other watershed groups exist but have not yet been formally designated by the Rivers Council.

DEM NPS Staff have provided the administrative and staff support (meeting coordination and minutes, treasurer duties, grant payments, etc.) for the Council for the last five years. The Council holds 11 monthly meetings per year. DEM has also coordinated and staffed the Rivers Council's display table at annual functions including the Roger Williams Park Zoo Party for the Planet (April 2011 through 2014) and Narragansett Beach Environmental Awareness Day (July 2011 through 2014).

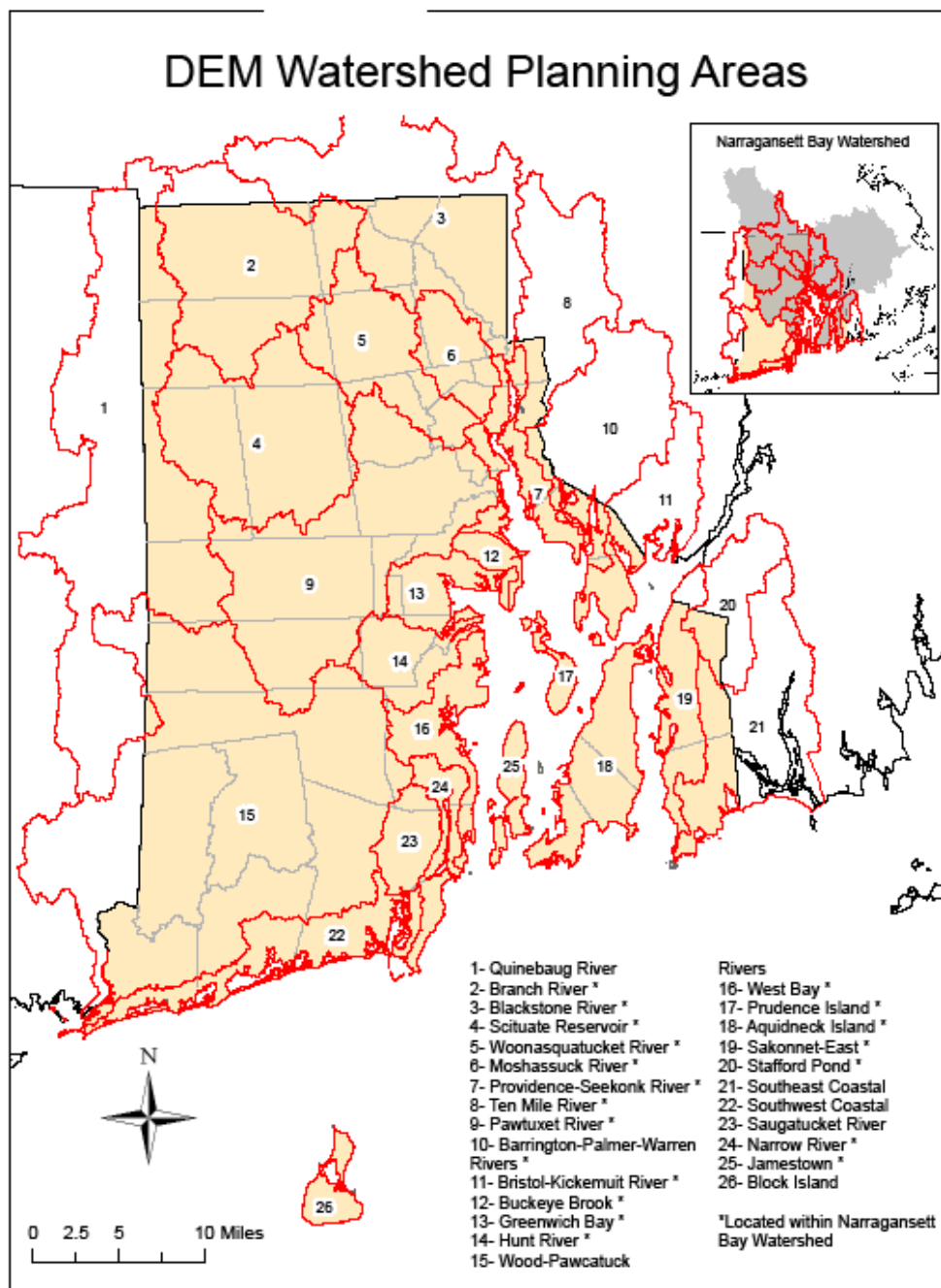


Figure 2. Watershed Planning Areas

Developing Water Quality Restoration Plans (TMDLs)

DEM utilizes Section 319 funding, in conjunction with other state and federal funds, to support development of water quality restoration plans, also known as Total Maximum Daily Load (TMDLs). The plans, required by the federal Clean Water Act, are developed after targeted monitoring and field investigation of a watershed area. The plans identify sources of pollution and determine the level of reduction in pollutant loadings required to meet water quality standards and criteria in specific waterbodies. To support implementation of water quality restoration actions, the NPS program collaborates with the TMDL program to identify needed NPS abatement projects; e.g. structural pollution controls, BMPs, and encouraging local entities to take advantage of financial assistance programs for such projects, including distribution of Section 319 funds by DEM.

Begun in 2008, Rhode Island utilizes the Integrated Report format to meet its Clean Water Act Section 305(b) and 303(d) list reporting requirements. For the 2012 reporting cycle, assessments were completed on a total of 880 assessment units. Of these, 120 assessment units or 96 named waterbodies have at least one waterbody impairment, and are included on the state's 2012 303(d) list.

Between October 2012 and September 2014, the DEM Office of Water Resources staff continued work to develop and complete water quality restoration plans addressing metals and pathogen impairments on the Blackstone River, Mill River, and Peters River, and nutrient impairments on Scott Pond; metals, pathogen and nutrient impairments on the Ten Mile River and its three impoundments; and an addendum to the Statewide Bacteria TMDL to include lower segments of the Pawcatuck River as well as several tributaries to the Pawcatuck River and Pierce Brook. During this time period, staff also worked on developing a TMDL addressing biodiversity impairments on Buckeye Brook and tributaries to Warwick Pond, and on developing the TMDL approach for the nine Newport Water Supply Reservoirs proposed for listing on the 2014 303d list as impaired for drinking water and aquatic life uses. A listing of all approved and draft TMDLs, their status and further information is found at <http://www.dem.ri.gov/programs/benviron/water/quality/rest/index.html>.

In addition, Office of Water Resources staff participated in a number of meetings and workgroups identified below to encourage and assist in the implementation of actions to improve water quality:

- Provided technical review and participated in meetings with various municipalities: 1) Participated on Steering Committee for Roger Williams Park Ponds Water Quality Restoration Study (to among other objectives, implement Roger Williams Park Ponds TMDL) led by City of Providence Parks Department and Narragansett Bay Estuaries Program with STAG grant; 2) Participated as a member of the Providence Sustainability Water Working Group; 3) participated with Assistant Director of Natural Resources in ad

hoc committee with the Tiverton Town Council and Conservation Commission members to address the town's concerns regarding Stafford Pond's water quality;

- Provided technical review and participated in meetings with RIDOT to evaluate alternatives for resolving beach closures caused by stormwater discharges at the Scarborough State Beach;
- Provided technical advice and participated in meetings with US Fish and Wildlife, Town of Middletown and other stakeholders to develop scope of work for watershed management initiative to enhance resiliency of the Maidford River Watershed including conceptual design of Green Infrastructure best management practices as part of the Sachuest Bay Coastal Resiliency Project;
- Provided technical advice and participated in meetings with US Fish and Wildlife, Towns of Narragansett and South Kingstown, and the Narrow River Preservation Association to develop scope of work for stormwater management best management practices to mitigate stormwater water quality impacts and enhance resiliency of Narrow River.
- Outreach: 1) participated as speaker at a community organized Urban Ponds Procession through the streets of South Providence in June 2013 bringing attention to efforts to restore Mashapaug Pond and Roger Williams Park Ponds; 2) made a presentation to the Blackstone River Coalition's Strategic Planning Committee to provide water quality information to assist the group in setting priorities; 3) participated as a presenter at the annual Metcalf Institute workshop for environmental reporters; 4) participated as a presenter at the 2014 Land and Water Summit (making two presentations, one on stormwater utilities and the other on state's role in responding to cyanobacteria blooms); 5) participated as a presenter at the 2014 Bay Agenda meeting hosted by Save the Bay for RI legislators; 6) participated in two separate forums discussing Aquidneck Island water quality and stormwater issues – one hosted by the Aquidneck Land Trust and the other by Save the Bay; 7) made a presentation to the Green Infrastructure Coalition about stormwater utilities
- Attended meetings organized by Natural Resources Conservation Service including the State Technical Team meetings and various sub-committee meetings to coordinate on implementation of Farm Bill programs (EQIP, WHIP) relative to TMDL and other state water quality priorities including the implementation of National Water Quality Initiative program efforts;
- Participated on various standing and ad-hoc groups providing technical and policy development support on: RI Water Resources Board, State Conservation Committee Goose Control Management project, and DEM Water Quality and Wetlands Restoration Team;
- Working with others in the Office of Water Resources, continued to provide direction and support on cyanobacteria monitoring and the need for public health advisories to the RI Department of Health. Staff have continued coordination with the Department of Health on implementing a communication strategy for advising communities and the general public about public health concerns associated with cyanobacteria blooms;
- Coordinated with Connecticut Department of Environmental Protection in development of bacteria TMDLs on the bi-state Pawcatuck River;

- Coordinated with Department of Health in oversight of a source water supply reservoir monitoring program implemented by the Newport Water Department;
- Coordination with MADEP Stormwater Coordinator in providing direction and oversight to Bi-State Stormwater Coordinator hired under EPA Grant to advance stormwater management in the Blackstone River and Ten Mile River watersheds;
- Coordination with MADEP and US EPA Chelmsford Lab personnel in developing and implementing monitoring plan to locate bacteria sources in Massachusetts' portion of the Palmer River contributing to elevated bacteria levels in Rhode Island portion of the river; and
- Provided technical support to the Environmental Justice League and its partners in educating residential property owners and industrial park residents of best management practices that can be implemented in support of restoring Mashapaug Pond.

Stormwater Management

Stormwater has been identified as one of the major sources of water quality degradation in RI. As was reported in the previous NPS Annual Report, DEM and the RI Coastal Resources Management Council (CRMC) have been implementing the requirements of the 2010 "RI Stormwater Design and Installation Standards Manual", which dramatically impacted the design of new development and redevelopment projects.

Implementation of some of the innovative aspects of the Manual has been a challenge for both the stormwater designers and DEM/CRMC staff reviewing applications. In response, DEM and CRMC established the Stormwater Policy Group that is comprised of approximately 20 DEM and CRMC staff members involved in reviewing applications for stormwater management and developing policy and guidance. The Group meetings provide a forum for staff to discuss technical issues to ensure plans are reviewed in a consistent manner and to clarify the requirements of the Stormwater Manual by issuing guidance to stormwater design professionals. Information is shared with stormwater design and installation professionals via DEM's Stormwater Listserve. Nonpoint staff play a significant role in coordinating the meetings and developing guidance. The Stormwater Policy Group started in October 2013 and meets about once every three weeks with fifteen meetings held in FY 2014.

Stormwater Utilities

Throughout the time period covered by this report (Oct 1, 2012 – Sept 30, 2014), 9 Rhode Island municipalities participated in studies evaluating the feasibility of adopting stormwater utility districts. Three of these municipalities (Middletown, West Warwick, and North Providence) evaluated adoption of a municipal-wide stormwater fee and six (Providence, Cranston, Warwick, East Providence, Central Falls, and Pawtucket) participated in an evaluation of a regional

stormwater utility. The Office of Water Resources staff has responded to various municipalities' request for assistance in evaluating the adoption of stormwater management districts, as further described below.

Beginning in 2011, the Office of Water Resources staff, worked with a seasonal employee funded by a grant from the Narragansett Bay, Watersheds and Rivers Coordination Team (Coordination Team) to begin assisting municipalities by conducting stormwater utility feasibility studies for the Towns of Middletown, Westerly and Bristol, and partial feasibility study for the City of Cranston. The drivers and compelling arguments to consider adoption of a stormwater utility in each town were described. These included a discussion of town specific stormwater problems, the actions taken by each town to address these problems/issues, and what more needs to be done going forward.

In 2012, the Town of Middletown received grant funding from the Coordination Team to undertake further study of the feasibility of a stormwater utility and to establish a Stormwater Management Steering Committee to increase local understanding and support for stormwater management and financing. The Office of Water Resources worked with the Town and Coordination Team to hire a consultant to implement and facilitate the project and to provide support to the Town. The project wrapped up in May 2014 with publication of "Stormwater Management District Development Study – Final Report." The general consensus of the Steering committee was to continue to pursue the potential of implementing a stormwater user fee as the best mechanism for supporting the future stormwater program, from the standpoints of revenue sufficiency and stability, overall equity in terms of reflecting property impact on Town cost, and flexibility to reflect Middletown's current and future needs. The Office of Water Resources staff continues to work with municipal officials in Middletown in consideration of possible next steps.

During this time period, DEM also provided a grant from the 1986 Rhode Island Clean Water Act Environmental Trust Fund to the City of Providence in support of the Upper Narragansett Bay Regional Stormwater Management Initiative involving six municipalities (Providence, Cranston, Warwick, East Providence, Central Falls, and Pawtucket) in exploring adoption of a regional stormwater utility. Office of Water Resources staff served on the Project Management Team in selecting a consultant and providing technical advice throughout the project. The Phase I Study was structured to be the first of three phases. The primary purpose of this planning level assessment was to gather information to determine if a regional approach to funding stormwater management should be developed for the upper Narragansett Bay municipalities. Phase II will define the scope and governance of the utility, and Phase III will be the implementation. The study included a Steering Committee with representatives from the study area communities and a Stakeholder Group with local representatives from various interest groups.

The study wrapped up in June 2014 producing "Exploring Regional Solutions to Regional Problems – Upper Narragansett Bay Regional Stormwater Utility Feasibility Study Phase I – Final Report" which drew five major conclusions:

1. The Upper Narragansett Bay region has real, growing, shared and unresolved challenges in managing stormwater;
2. With adequate resources, the expertise is available to address these challenges and the solutions would provide tangible benefits to each municipality;
3. The solutions will cost more than municipalities are now spending on stormwater management;
4. A regional approach will be more efficient and effective than an individual community approach; and
5. A stormwater user fee, based on how much a property contributes to stormwater run-off is the best and fairest way to pay for the improvements.

Improving Onsite Wastewater Management

Onsite wastewater treatment systems (OWTSs) are another major source of nonpoint pollution in RI. DEM estimates that there are approximately 154,000 OWTSs in the state, serving roughly 36% of the state's population. Permits for all onsite systems in the state are issued by DEM.

Municipal Onsite Wastewater Management Programs

DEM has long supported local actions to manage onsite wastewater treatment systems. The development of an onsite wastewater management plan is the first step recommended by DEM for local management. Eighteen towns have adopted an onsite wastewater management plan as of September 30, 2014 (see Figure 3 and Attachment 1 – Summary of Municipal OWTS Programs).

Once a community has a DEM approved Onsite Wastewater Management Plan, the community is eligible to participate in the state's Community Septic System Loan Program (CSSLP) which is administered by the Clean Water Finance Agency. Communities participating in the CSSLP can access funds from the state's Clean Water Revolving Loan Fund, which can then be loaned to homeowners at a 2% interest rate for up to 20 years. Over the past 14 years, the CSSLP has issued 39 loans to 14 towns totaling \$12,900,000. Six loans (each for \$300,000) were awarded in FY 2013 and 2014 to Tiverton, North Kingstown (2 loans), Charlestown, Scituate, and Westerly, for a total of \$1,800,000.

The Community Septic System Loan Program has been successful, but there remain 10 towns in Rhode Island that have a significant dependence on OWTSs without access to this valuable program because they do not have an onsite wastewater management plan. (The remaining 11 of the total 39 towns are primarily served by municipal sewers.) The Department's goal is to maximize participation in CSSLP and help these towns take advantage of the work that has been done before in developing onsite wastewater management plans (OWMPs). In FY 2014 DEM initiated contact with these towns and all 10 responded positively.

Onsite Wastewater Management Plans

Status as of September 30, 2014

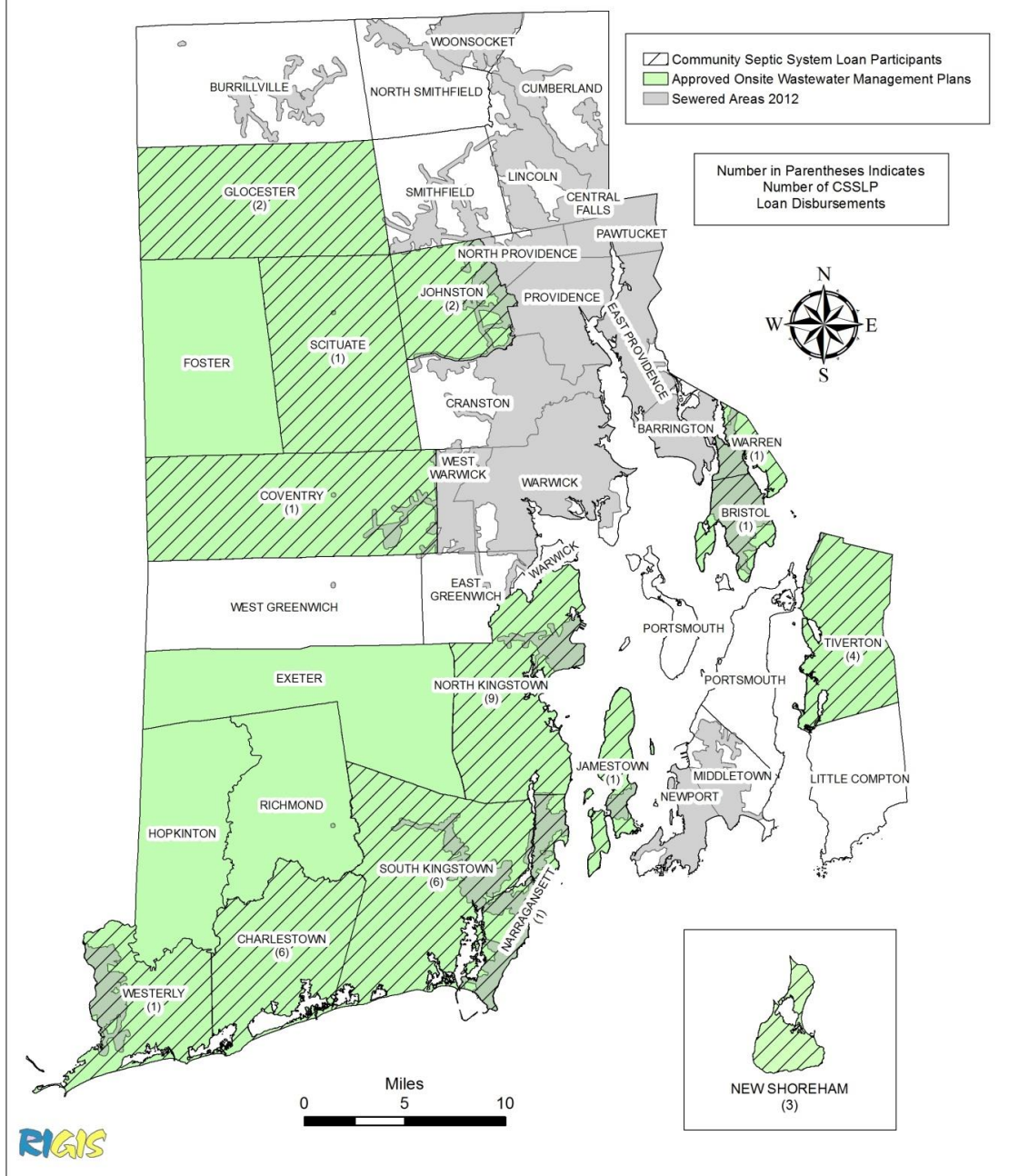
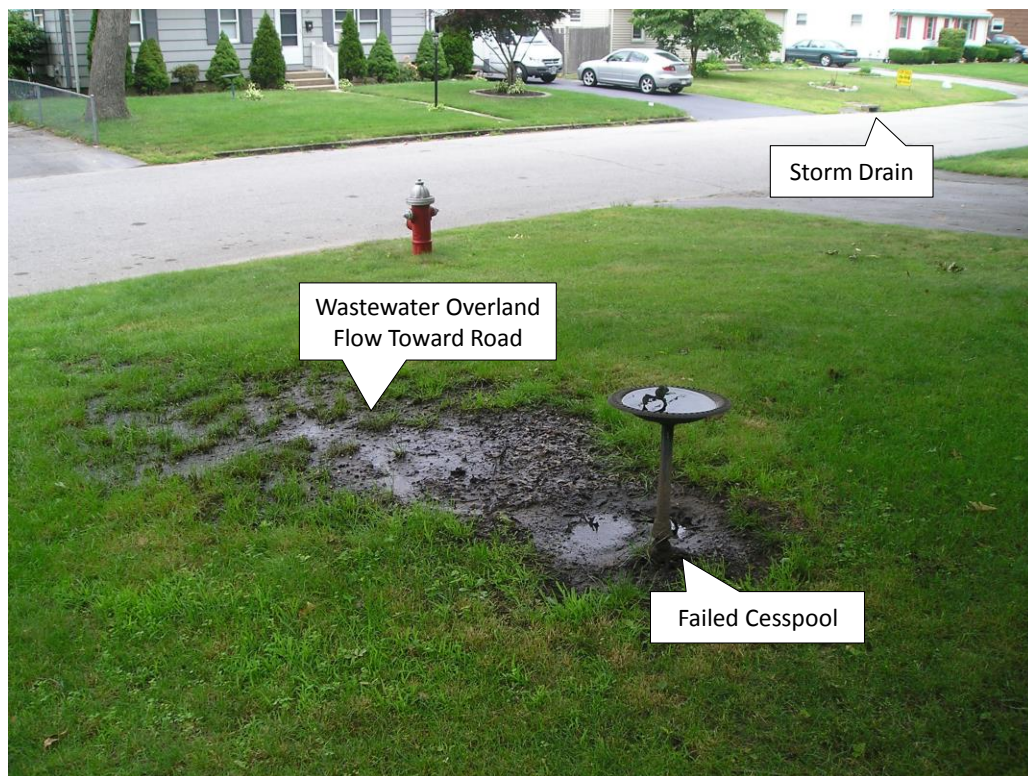


Figure 3. Status of Onsite Wastewater Management Plans in RI (September 30, 2014)
Rhode Island Cesspool Act of 2007: Implementation and Enforcement Phase

DEM estimates there are approximately 15,000 cesspools still in use across Rhode Island. All cesspools in the state pre-date 1968, the first year regulations for septic systems took effect. Cesspools are considered substandard systems because they don't treat wastewater, they merely dispose of it. Cesspools concentrate the wastewater in one location, often deep within the ground and in direct contact with groundwater, causing groundwater contamination. This groundwater flows into drinking water wells and surface waters contributing to adverse public health and environmental impacts. Cesspools are also more likely to back-up with wastewater on the ground surface. In contrast, conventional septic systems place the wastewater well above the level of soils saturated by groundwater and they disperse this effluent over a large area, which results in substantial removal of pathogens and other pollutants.

The RI Cesspool Act of 2007 (RIGL 23-19.15) calls for the replacement of cesspools that are within 200 feet of coastal waterbodies, within 200 feet of drinking water reservoirs, and within 200 feet of public wells.



Failed Cesspool

DEM completed the notification process in December 2012 for property owners potentially subject to the Act. Over 1000 cesspools were identified through this process and over 600

cesspools have been removed from service. The deadline for upgrades under the Act has now passed and DEM has initiated the enforcement phase of implementing the law. At the close of FY 2014, 395 cesspools and 213 unknown systems were still in service.

As of September 30, 2014 the Department has issued 130 citations to property owners currently out of compliance with the Act. DEM is using a new Expedited Citation process which is intended to provide a faster and easier way for respondents to resolve violations. Expedited Citations include a fine and a compliance order and are valid for 60 days. If the property remains out of compliance when the Citation expires, the Department maintains authority to proceed with a formal Notice of Violation (NOV) including a larger fine, which can be recorded as a lien against the property.

The notices issued by DEM have generated new interest among some property owners in gaining access to sewer service. The towns of Narragansett, Westerly, East Greenwich, East Providence, Tiverton, North Kingstown, and Warwick each have regions of dense development close to coastal features and subject to the Act but not served by municipal sewers. Each of these towns has either initiated or accelerated discussions of plans to extend sewer service due in part to the R.I. Cesspool Act. Many of the areas under discussion are less suitable for the use of onsite systems due to high water tables, poor soils, small lot sizes, etc. These same factors tend to increase the cost of onsite systems, potentially making a more centralized wastewater treatment strategy the more cost effective and environmentally protective solution. The Department has been working with each of these towns as they develop their plans so the goals of the Cesspool Act can be met as efficiently as possible. As of September 30, 2014, East Providence, Tiverton, and North Kingstown have made commitments to construct sewer line extensions by the 2020 deadline in the Act.

DEM is now working to broaden efforts to eliminate cesspools by amending the existing R.I. Cesspool Act of 2007 to expand its applicability across the state, not just to the 200-foot zones surrounding the coastal shoreline and public drinking water supplies. The proposed amendment would require cesspools not already subject to the Act to be removed from service at the time a property changes ownership. DEM estimates 800 to 1000 additional cesspools per year could be addressed, a dramatic increase in the rate of replacement compared to current trends. DEM has worked to support this legislation by:

- Testifying at public hearings;
- Partnering with the RI Association of Realtors to conduct outreach efforts to educate realtors and homeowners on the shortcomings of cesspools; and
- Working with Towns to broaden access to financial assistance through the Community Septic System Loan Program. This will not only reduce the number of cesspools still in use in Rhode Island but will also improve wastewater treatment generally by improving oversight of existing septic systems.

Cesspool Act Implementation Status

Municipality:	Total # Responses	# Cesspools Discovered	Cesspools replaced with OWTs	Cesspool replaced with sewers	Remaining Known Cesspools	Remaining Unknown Systems
Barrington	1	0	0	0	0	0
Bristol	15	3	2	0	1	0
Burrillville	26	4	2	2	0	2
Coventry	15	2	1	0	1	2
Cranston	8	2	0	1	1	0
Cumberland	5	1	1	0	0	0
E. Greenwich	9	4	0	3	1	0
E. Providence	23	8	0	3	5	5
Exeter	6	3	1	0	2	0
Glocester	23	6	5	0	1	1
Hopkinton	28	5	4	0	1	1
Jamestown	11	9	7	0	2	1
Johnston	2	1	0	0	1	0
Little Compton	77	41	25	0	16	8
Middletown	28	11	1	9	1	1
Narragansett	331	83	45	0	38	21
Newport	20	4	2	1	1	1
N. Kingstown	561	155	99	0	56	21
N. Smithfield	14	3	2	0	1	0
Portsmouth	441	240	116	0	124	12
Richmond	5	2	1	0	1	0
Scituate	22	4	3	0	1	0
Smithfield	3	1	0	0	1	0
Tiverton	211	78	32	0	46	31
Warren	156	43	22	0	21	6
Warwick	482	181	31	129	21	82
West Greenwich	3	1	1	0	0	0
Westerly	347	137	86	0	51	18
Totals:	2873	1032	489	148	395	213

Wetlands and OWTS Legislative Task Force

In the Spring of 2013, the RI General Assembly passed an amendment to the RI Regulatory Reform Act regarding statewide standards for wetlands and septic disposal (RIGL 42-64.13-10). The law was passed in response to legislative findings that included:

- Statewide standards utilized by DEM and CRMC in issuing permits for development that may impact wetlands and in permitting OWTSs, may be inadequate to protect the state's natural resources and need to be re-evaluated based on current scientific information;
- Many municipalities have more stringent setback standards from wetlands and other water resources and OWTS disposal standards than the state standards;
- Dissimilar standards between municipalities and between the state and the municipalities are considered a burden to business and property owners that need a predictable regulatory environment to be successful.

The law required that the Department of Administration Division of Planning, in consultation with a Task Force, prepare a report by December 31, 2014 making recommendations to ensure protection of the state's natural resources while balancing the need for economic development. The Task Force was charged with assessing the adequacy of current protection efforts, identifying gaps in the protection and to "Recommend statutory and/or regulatory changes that are required to protect wetlands statewide, including, that upon the establishment of such standards by the legislature, municipalities shall not adopt or enforce any local ordinances or requirements for OWTSs or wetland buffers and setbacks that exceed or otherwise conflict with such recommended statewide standards."

The Division of Planning began in the summer of 2013 working closely with DEM and CRMC on implementing this law. A Task Force was formed and the initial meeting was held in September 2013. At the initial meeting the Task Force agreed to focus exclusively on wetland buffers for land disturbances and OWTS setbacks to such wetlands (excluding the topic of different OWTS treatment standards).

Through Sept 30, 2014, 13 Task Force meetings were held. The Task Force meetings presented information on the functions and values of wetlands and the current regulatory environment (state and local) and then proceeded to discuss recommendations to best meet the needs of the legislation. DEM Wetlands, OWTS and Nonpoint Staff are part of the Working Group to assist the Division of Planning in identifying issues for the Task Force, developing initial recommendations, and helping to compile the Report. DEM staff also provided presentations at Task Force meetings on:

- RI law and regulations for wetlands protection and OWTSs;
- Previous efforts of wetland related task forces from 1995 and 2001;
- Other New England state regulations for wetlands and OWTSs;
- Review of scientific literature on wetland buffers; and
- Summarizing key scientific facts regarding wetland buffers and OWTSs.

Final Task Force meetings continued through the Fall of 2014. A Final Report was completed in December 31, 2014. The report is available on the RI Division of Planning website at: http://www.planning.state.ri.us/documents/LU/legtask/2015/LTF_Final_Report_2014.pdf Legislation to implement the task force recommendations was introduced and is under consideration in the 2015 session of the General Assembly.



Nitrogen Impacts

Nitrogen impacts to RI's surface waters and groundwaters from nonpoint sources continue to be a major water quality issue in RI. Nonpoint sources of nitrogen are from OWTSSs, agricultural operations (animal wastes and fertilizers), turf grass fertilization (homeowner as well as recreation areas), and atmospheric deposition. Areas of concern in RI have focused on:

- Coastal areas, particularly the coastal salt ponds wherein DEM required that all OWTSSs that are installed or repaired in the south shore salt pond and Narrow River watersheds be denitrification OWTSSs; and
- Dense areas of development where homes are dependent on both private drinking water wells and OWTSSs.

In this reporting period, the two areas discussed below impacted by nitrogen required considerable involvement of DEM's Nonpoint staff.

Middletown Private Wells

In mid-March 2014 the RI Department of Health (DOH) notified DEM of a private well on Wapping Rd. in Middletown with a nitrate concentration of 28 mg/L. This is one of the higher nitrate concentrations that has been detected in RI private wells. The drinking water standard for nitrate is 10 ppm. The natural background value for nitrate in Rhode Island is less than 1 mg/L, however due to human influence nitrate concentrations in private wells are more likely to be in the 1-3 mg/L range. DOH followed up with direct mailings, press releases and notifications to area homeowners urging that they test their wells for nitrate. The town of Middletown assisted the homeowners by providing sample bottles and transporting samples to the DOH lab.

The homes in the area are all dependent on private drinking water wells and onsite wastewater disposal systems. The area is surrounded by farmland and many of the existing homes are built on former farmland. Immediately upgradient of the wells with the highest concentration of nitrate is a large area of farmland that includes a nursery operation. A portion of the impacted area is in the Paradise Brook watershed. Paradise Brook flows into Nelson Pond, which is one of the City of Newport's drinking water reservoirs.

A public meeting was held on May 7, 2014 that was attended by approximately 75 residents. State and town officials discussed the sampling results, health impacts of nitrate, potential sources (OWTSs, nearby farm activities, and home fertilizers) and potential next steps, including whether or not to provide public drinking water to the area.

Sixty-six homeowners tested their wells in the impacted neighborhood. Test results showed that 15 wells exceeded the drinking water standard of 10 ppm and 22 wells had concentrations between 5 and 10 ppm. In comparison, 41 homeowners in other parts of Middletown tested their wells due to the concerns about nitrate and none of those wells had concentrations greater than 10 ppm.

All homeowners with concentrations greater than 10 ppm were then contacted to see if they would like to have their water tested for pesticides. Fourteen well samples were collected by DEM Water and analytical work was paid for by DEM Agriculture. Metolachlor, a commonly used agricultural pesticide that is not used by the general public was the only pesticide detected. It was detected in 3 wells at concentrations far below the lifetime drinking water health advisory. DEM Division of Agriculture is currently meeting with the farmers in the area to discuss proper nutrient management.

DEM dealt with a similar situation on Turner Road in Middletown in the mid-1990s with private wells having high nitrate concentrations and in an area served by OWTSs and with a nearby nursery operation. No definitive source was identified and it was concluded that the nitrate contamination was due to the cumulative effects of historical and present land uses (residential and agriculture). Public water was brought into the neighborhood.

Quonochontaug, Charlestown

The Quonochontaug neighborhood of Charlestown lies on a headland between Quonochontaug Pond to the west and Ninigret Pond to the east. Homes in the area are dependent on local groundwater for their water supply and all utilize OWTSSs. Drinking water for 282 of the 798 homes in the area (35%) is provided by 2 small community public water systems: Central Beach Fire District and the East Beach Water Association. The remaining 516 homes in Quonochontaug are served by private wells.

The public water systems provide water from well fields that are in close proximity to one another in the central part of the headland, each with 2 wells. These wells have elevated levels of nitrate, particularly the East Beach wells where nitrate concentrations have been detected in the 6 to 7 ppm range. In 2010 an analysis of 47 private wells throughout this area revealed that 27% of the wells tested had concentrations greater than 5 ppm at least once during the sampling period of June - November (Donohue, Jessica 2013.

Assessment of Housing Density Impacts on Groundwater Quality: Integration of Water Quality Data into a GIS-Based Model for Estimating Groundwater Nitrate Concentrations. University of RI Master's Thesis).

The Atlantic States Rural Water and Wastewater Association has been brought in by the RI Department of Health to work with the Quonochontaug residents, water suppliers and the town to prepare a Source Water Protection Plan. DEM Nonpoint Staff have been attending meetings and providing assistance in the discussion of sources and means to reduce nitrates in the groundwater. An initial meeting was held in July with all of the stakeholders and further meetings are planned for later in 2014.



Pharmaceuticals and Personal Care Products

Pharmaceuticals and personal care products (PPCPs) comprise a diverse and vast group of chemicals including, but not limited to, prescription and over-the-counter human drugs, veterinary drugs, diagnostic agents, nutritional supplements and vitamins, and other consumer products such as fragrances, cosmetics, and sun-screen agents. PPCPs include a broad array of synthetic and naturally occurring compounds that are not commonly monitored or regulated.

- PPCPs enter both the soil and aquatic environments through a variety of sources, including, but not limited to wastewater treatment facility effluent, OWTs, combined sewer overflows, treated sewage sludge, landfill leachate, industrial effluent, and agriculture (animal wastes). Contributions to the environment from these sources remain poorly characterized.
- Medications can end up in our waters due to the improper disposal of medications directly into sewer systems and OWTs. However, a larger percentage of these medications are released to the environment by means of human waste going into our wastewater systems.
- PPCPs are being detected in groundwater, streams, rivers, lakes, reservoirs, and drinking water supplies of the Northeast at very low concentrations. New and improved analytical detection methods have enabled the detection of these chemicals in our waters at very low concentrations, often found in the parts per trillion range or less.
- Currently there are no US EPA/state water quality standards or drinking water standards for most of these individual chemicals.
- These compounds are not routinely monitored for as part of federal or state monitoring programs, and much of the monitoring to date has depended on specific research projects.
- The presence of these chemicals in our waters has been linked to impacts on aquatic species, including changes in fish sex ratios, development of female fish characteristics in male fish, changes in nesting behavior by fish, and adverse effects on invertebrates.
- At this time, many unknowns remain regarding the potential for adverse effects on public health and the environment from PPCPs in the environment. No scientific studies have documented evidence of human health impacts of PPCP in drinking water.

In response to concerns about pharmaceuticals and personal care products in RI's water supply, the RI Senate created the Special Legislative Commission to Study Public Health Threats from Pharmaceutical Human Waste Contamination in the Water Supply in June 2012. Staff from the Nonpoint Source Program and the Office of Waste Management represented DEM on the Commission. The Commission met 3 times from October 2012 through December 2012 hearing testimony from experts within the fields of medicine, pharmaceutical safety and environmental quality. The final report was issued September 2013 with the following unanimous recommendations:

- 1) That the General Assembly provide funding for a public information campaign about the safe disposal of pharmaceutical waste in home and healthcare settings;

- 2) That the General Assembly review ‘pharmaceutical take back’ programs currently operating in the state and consider an expansion in size and scope; and
- 3) That pharmacies operating in the state of Rhode Island be required to share information about local ‘pharmaceutical take back’ programs with customers at the point of sale;

Although it was emphasized that no evidence was offered to the Commission indicating an immediate public health threat in Rhode Island from any pharmaceutical contaminants and human wastes, some Commission members felt that additional actions should be considered to limit these contaminants from entering the state’s public and private drinking water supplies.

Other NPS Program Activities

Chickasheen Brook Watershed Success Story – In September 2014, EPA posted a summary of the water quality improvements in the Chickasheen Watershed on its Nonpoint Source Success Stories website at http://water.epa.gov/polwaste/nps/success319/ri_chicka.cfm . A description of the water quality improvements is provided below:

Chickasheen Brook, Yawgoo Pond, and Barber Pond are interconnected waterways in southern Rhode Island. Water quality monitoring data collected between 1998 and 2002 showed elevated phosphorus concentrations attributed to the inundation of Arrow Swamp, which flows into Chickasheen Brook, due to beaver activity. As a result, RIDEM added the three waterbodies to the state’s Clean Water Act (CWA) section 303(d) list of impaired waters: Barber Pond for low dissolved oxygen (DO) (1998), Yawgoo Pond for low DO (1998) and total phosphorus (TP) (2002), and Chickasheen Brook for TP (2002). Removal of beavers and their dams restored the flow regime to Chickasheen Brook, reducing phosphorus levels in the brook and downstream ponds. Monitoring results show reduced phosphorus levels, indicating that management efforts have made significant progress toward meeting water quality standards.

National Water Quality Initiative (NWQI)

The NWQI is a cooperative effort between the USDA Natural Resources Conservation Service (NRCS) and the EPA Nonpoint Source Programs wherein at least 5% of the NRCS Environmental Quality Incentive Program (EQIP) funds are dedicated for farmers to implement projects to improve water quality in priority watersheds. Section 319 funds are to be used to monitor water quality in these watersheds to evaluate the project effectiveness in improving water quality.

DEM NPS staff coordinated with NRCS in designating 3 watersheds in RI: Tomaquag Brook – Pawcatuck River, Sakonnet River and Upper East Passage. The latter 2 watersheds were chosen

due to the suspected impacts of agriculture on the waters that supply the City of Newport's water system. During FY 2014 DEM planned for the initiation of a water quality sampling program to collect baseline data and to identify specific areas in which to encourage use of NRCS EQIP funds.

Water Quality/Wetlands Restoration Team:

The DEM Water Quality/Wetland Restoration Team offers enhanced assistance for environmentally beneficial projects that improve water quality or restore habitat and wetlands, by working with applicants during project planning and design to help successfully advance projects to the application stage. The Team brings together representatives from DEM Water quality and permitting programs (including the NPS Program), with input from the DEM Division of Fish and Wildlife, DEM Office of Waste Management, and RI Coastal Resources Management Agency on an as needed basis.

Example project types receiving this assistance are:

- Invasive species cutting and clearing (e.g. Phragmites);
- Storm water retrofit projects and other water quality restoration BMPs;
- Riparian and other buffer enhancement/restoration projects;
- Fish passage projects (both fish ladders and dam removals);

DEM Office of Water Resources routinely makes it a grant condition for certain water quality improvement projects (including Section 319 funded projects) to undergo review by the Water Quality/Wetlands Restoration Team. One goal is to avoid issues that would cause publicly-funded projects to get delayed during permitting.

The Water Quality/Wetlands Restoration Team generally meets once a month upon request. Six meetings were held in FY 2013 and 11 meetings in FY 2014. Thirteen projects involving fish passage and invasive plant management were assisted via the meetings.

Aquatic Herbicide Applications – Applications to DEM for a “Permit to Control Aquatic Nuisance Species Using Pesticides” are submitted to the DEM Division of Agriculture and then forwarded to the Office of Water Resources for comment. DEM NPS staff participate in the application review to ensure that there are no likely impacts to public health and the environment from the application, particularly in regards to surface water quality and the impacts on private drinking water wells. Recommendations are often made regarding the appropriate type of herbicide to use. Number of applications reviewed: 55 in FY 2013 and 65 in FY 2014.

New England Interstate Water Pollution Control Commission (NEIWPCC) Workgroups: DEM staff participate in the NEIWPCC Workgroups described below with staff from EPA Region 1,

the five other New England states and New York. Each workgroup meets or holds conference calls two to three times per year.

- The Nonpoint Source Pollution Workgroup provides a forum to share ideas on NPS issues and Clean Water Act Section 319 grants.
- The Pharmaceutical and Personal Care Product Workgroup addresses the concerns about this class of emerging contaminants in groundwater and surface water.
- The Onsite Wastewater Workgroup is a forum for information exchange among the state regulators working with onsite wastewater issues.
- Groundwater/Source Water Workgroup addresses the numerous and varied issues in the protection of groundwater and surface water used for drinking water supply from geothermal concerns to pesticides.
- TMDL Workgroup addresses issues in developing and implementing water quality restoration studies.

NEIWPCC Annual Nonpoint Source Conferences:

- DEM NPS staff attended the annual conference in Burlington, VT on May 14 and 15, 2013.
- The 25th Annual Nonpoint Source Pollution Conference was held in Newport, RI April 29 and 30, 2014. As the host state and one of the conference sponsors, DEM staff played a significant role in planning this conference. The Conference attendees included a mix of staff from local, state and federal government; private companies and non-profit organizations. The focus of the conference was managing stormwater to mitigate impacts on water quality, with sessions on stormwater utilities, green infrastructure/low impact development, impervious cover and BMP maintenance. An optional field trip on the final afternoon featured a trip to Bristol Town Beach with a tour of the stormwater best management practices installed there as well as a demonstration of canine scent detection of coliform bacterial pollution by Environmental Canine Services, LLC.

The Northeast Voluntary Turf Fertilizer Initiative:

In 2011, the New England environmental agency commissioners asked the NEIWPCC to engage stakeholders in the development of a regional set of turf fertilizer guidelines to reduce the impacts of nitrogen and phosphorus on water resources. This effort was staffed and coordinated by NEIWPCC. DEM NPS staff members were part of the Project Advisory Group.

Stakeholder meetings were held in Boston in May 2012 (FY 2012) that focused on formulation and labeling issues of turf fertilizer. Two additional meetings in March 2013 (one in Providence, RI) focused on fertilizer application practices. With input from these stakeholder meetings and continued input and review from the Project Advisory Group, NEIWPCC issued the final report “Regional Clean Water Guidelines for Fertilization of Urban Turf.” A set of 33 regional

guidelines are presented in the Report organized around the “5R’s”: right formulation, right rate, right time, right place and right supporting actions.

It is the intent that DEM and other state water quality agencies, municipalities, and watershed groups will use or adapt these guidelines as a basis for outreach and education efforts related to turf fertilization.

EPA Grant Reporting and Tracking System (GRTS): In addition to annually reporting grant information into this required EPA database system, DEM NPS staff attended the national GRTS training session held in Chicago, IL from December 9th-12th, 2013. The primary focus of this training was to explain the new FY 2014 Section 319 requirements that had just been implemented and how those changes would be reported in the GRTS database.

MBE/WBE DBE Workshops: In response to questions regarding compliance issues raised by municipalities regarding the utilization of Disadvantage Business Enterprises (DBE), Minority Business Enterprises (MBE) and Women Business Enterprises (WBE) in projects funded by the US EPA and the State of Rhode Island, DEM NPS Staff joined with staff from US EPA, RI Department of Health, RI Department of Administration MBE Compliance Office, the Narragansett Bay Commission, the RI Clean Water Finance Agency, and the RI Water Resources Board to develop an informational workshop for municipal grant managers.

Two workshops were held on February 26, 2014 and February 28, 2014 at which grant managers were instructed in how to comply with US EPA and State of RI requirements for MBE/WBE/DBE utilization for grant projects funded with US EPA funding. Approximately 50 representatives of RI municipalities, non-profits and environmental consulting firms attended one of the two workshops and feedback from the workshop rated it as “excellent” and “very informative.” Since the workshops, municipal compliance with MBE/WBE/DBE requirements has improved significantly.

Blackstone River Decentralized Wastewater Demonstration Project: DEM’s Nonpoint and Onsite Wastewater Programs took responsibility for the RI portion of this EPA funded project for a \$621,000 grant to the Town of Glocester to address water quality concerns in the village of Chepachet. Chepachet has had chronic septic system failures for many years that are a threat to the Chepachet River and the groundwater that is the source for all of the drinking water in the village. In addition, untreated stormwater discharges to the Chepachet River occur in several locations and drainage problems have led to localized flooding. The Town chose to narrow its focus to give priority to the stormwater issues in the village. The project has provided opportunities to coordinate with the RI Department of Transportation (currently designing an upgraded drainage system for State Route 44), the DEM Office of Waste Management, and the Rhode Island Historical Preservation Commission. The result of this coordination has been the

construction of a wet vegetated treatment system near the River for stormwater management, a newly created town park on a remediated brownfields site, and a conceptual design for a wastewater collection system which will be completed when further funding can be obtained. Construction on the wet vegetated treatment system was completed in November 2012.



Chepachet Wet Vegetated Stormwater Treatment System

ACKNOWLEDGEMENTS

This Report of Activities in the RI Nonpoint Source Program for FY 2013 and FY 2014 was compiled by the following RIDEM Office of Water Resources staff: Sue Kiernan, Ernie Panciera, Betsy Dake, Elizabeth Scott, Jonathan Zwarg and Lisa McGreavy; with support from Margherita Pryor, US EPA.

Attachment 1

Summary of Rhode Island Municipal Onsite Wastewater Programs

September 30, 2014

The R.I. Department of Environmental Management (DEM) has established minimum standards for onsite wastewater treatment systems throughout the state- Rules Establishing Minimum Standards Relating to Location, Design, Construction and Maintenance of Onsite Wastewater Treatment Systems. The rules are available online at: <http://www.dem.ri.gov/pubs/regs/regs/water/owts14.pdf>. DEM also encourages municipalities to establish local programs to meet the onsite wastewater needs of each community. Cities and towns have authority under state law to establish local management programs to encourage or require septic system maintenance. Most of these programs have been created with the assistance of State Bond funds or Federal Nonpoint Source funds distributed through DEM grants (with the exception of New Shoreham, where an EPA grant was used). Towns use these funds to develop an onsite wastewater management plan (OWMP) designed to meet local needs. An OWMP describes the elements of the municipal management program for septic systems. Program elements may include, for example, passing an ordinance requiring system inspections, enhancing homeowner education, or specifying more stringent treatment requirements in environmentally sensitive areas. Once approved by DEM, an OWMP makes a town eligible to apply to the Community Septic System Loan Program (CSSLP). CSSLP has been the primary incentive for towns to develop an OWMP. CSSLP funds come from the State Revolving Fund and are administered by Rhode Island Housing. Money is used by participating towns to provide low-interest loans to homeowners to cover the costs associated with septic system repairs and upgrades.

This document provides a brief summary of local onsite wastewater management in Rhode Island. Eighteen towns have an approved OWMP; fourteen participate in the CSSLP. The following cities and towns are primarily served by sewers and have not initiated local efforts to manage septic systems: Barrington, Central Falls, East Providence, Lincoln, Newport, North Providence, Pawtucket, Providence, West Warwick, and Woonsocket.

Bristol: Much of the Town of Bristol is served by municipal sewers, but some onsite systems are in use. Bristol has an approved OWMP and is participating in the CSSLP. The plan calls for voluntary system inspections and homeowner education.

Burrillville: Burrillville does not have an active municipal onsite wastewater management program at this time.

Charlestown: Charlestown has an approved OWMP and has a robust municipal onsite wastewater management program in place. The town charter includes a dedicated staff person to run the onsite wastewater program. The town has a wastewater management ordinance requiring periodic inspection of onsite systems. The town also maintains a web-based septic system inventory and tracking program, and is in the midst of a town-wide cesspool phase-out program. Charlestown also participates in the CSSLP.

Coventry: Coventry has an approved OWMP and participates in the CSSLP. The approved OWMP proposes phased implementation of a management program based on improving homeowner awareness, creating a septic system inventory, and promoting voluntary system inspections. The management program focuses on making financial assistance available to repair or replace failed systems and cesspools.

Cranston: The City of Cranston is primarily served by sewers and does not have an active municipal onsite wastewater management program at this time.

Cumberland: Cumberland does not have an active municipal onsite wastewater management program at this time.

East Greenwich: East Greenwich has a municipal sewer system for the area east of Route 2, serving approximately two-thirds of the town's population. The rest of the town is served by onsite systems. The town does not have an approved OWMP.

Exeter: Exeter has an approved OWMP. The plan calls for education and outreach efforts to encourage homeowners to properly maintain septic systems and recommends voluntary system inspections.

Foster: Foster has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections. The town also utilizes a web-based inventory program.

Glocester: Glocester has an approved OWMP and has implemented a limited municipal onsite wastewater management program. The town participates in the CSSLP. The management program encourages voluntary system inspections. The town also requires local review and a special-use permit for proposed onsite systems located within 150 feet of a waterbody.

Hopkinton: Hopkinton has an approved OWMP. The plan calls for education and outreach efforts to encourage homeowners to properly maintain septic systems and recommends voluntary system inspections.

Jamestown: Jamestown has an approved OWMP and has a municipal onsite wastewater management program in place. The town participates in the CSSLP. Jamestown has an onsite wastewater management ordinance requiring septic system inspections at regular intervals. The town also has a High Groundwater Overlay Zone specifying additional septic system siting and

treatment requirements. Jamestown uses a web-based inventory and tracking program to monitor septic system maintenance and track performance.

Johnston: Johnston has an approved OWMP and is participating in the CSSLP. The plan utilizes education and outreach efforts to encourage voluntary system inspections.

Little Compton: Little Compton does not have an active municipal onsite wastewater management program at this time.

Middletown: Middletown does not have an active municipal onsite wastewater management program at this time.

Narragansett: Narragansett has an approved OWMP and participates in the CSSLP. The town does not have an onsite wastewater management ordinance, but the zoning ordinance sets more stringent standards than the state regulations for septic system siting. The town utilities ordinance requires septic system pumping at least every 4 years, with records submitted to the town.

New Shoreham: The Town of New Shoreham has an approved OWMP and has a municipal onsite wastewater management program in place. The town has an onsite wastewater management ordinance requiring system inspections and maintenance. A town-wide cesspool phase-out program is ongoing. New Shoreham's zoning ordinance specifies treatment standards based on location and soil conditions. The town also participates in the CSSLP.

North Kingstown: The Town of North Kingstown has an approved OWMP and has a municipal onsite wastewater management program in place. The town has an onsite wastewater management ordinance requiring septic system inspection and maintenance at regular intervals. The town participates in the CSSLP with loan funds administered by the Water Department.

North Smithfield: North Smithfield currently has no formal municipal onsite wastewater management program. Basic outreach materials for septic system operations and maintenance are available on the Town's web site.

Portsmouth: Portsmouth does not currently have a DEM-approved municipal onsite wastewater management plan. The town is currently developing a program for enhanced management of onsite systems.

Richmond: Richmond has an approved OWMP. The plan calls for education and outreach efforts to encourage homeowners to properly maintain septic systems and recommends voluntary system inspections.

Scituate: Scituate has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections. The town also utilizes a web-based inventory program. The town participates in the CSSLP.

Smithfield: Smithfield does not have an active municipal onsite wastewater management program at this time.

South Kingstown: South Kingstown has an approved OWMP and has an onsite wastewater management program in place. The town has a wastewater management ordinance requiring inspection of onsite systems. A town-wide cesspool phase-out is nearly complete with all required deadlines having passed. Cesspools discovered via the inspection program had to be upgraded within 5 years of discovery. Cesspools were also required to be upgraded within 12 months of the sale of a property. The South Kingstown zoning ordinance contains more stringent setbacks from natural features than the state requirements. South Kingstown uses a web-based inventory and tracking program and participates in the CSSLP.

Tiverton: Tiverton has an approved OWMP and an onsite wastewater management program, including a management ordinance. The town participates in the CSSLP. The ordinance requires septic system inspection and maintenance and mandates the installation of access risers and effluent filters when systems are repaired or upgraded. Tiverton is in the process of implementing a limited cesspool phase-out program. The Town has focused initially on the Stafford Pond watershed and has nearly completed upgrades in this area. Coastal areas in Tiverton are still subject to the R.I. Cesspool Act of 2007 because the Town program specifies later deadlines than the State program.

Warren: Although much of the Town of Warren is served by sewers, the Touisset Neck section of town is not. The Town has an approved OWMP for the un-sewered areas of town. The plan proposes an aggressive monitoring and oversight program with a web-based inventory and tracking system. Warren participates in the CSSLP.

Warwick: Much of Warwick is sewered, but a significant number of onsite systems remain. The city is in the process of implementing a mandatory sewer tie-in program. Lots with access to municipal sewers will be required to abandon their onsite system and connect to the sewer line upon sale of the property. The city is considering the development of a management program for those areas where sewer service will not be extended.

West Greenwich: The Town of West Greenwich does not have an active municipal onsite wastewater management program at this time.

Westerly: The Town of Westerly has a municipal sewer system serving the downtown area, corresponding to approximately half the town's population. The rest of the town is served by onsite systems. Westerly has an approved OWMP which calls for creation of a wastewater management district for areas not currently served by sewers and where the Wastewater

Facilities Plan indicates sewer extensions are not planned. Within this district, the Town will create a homeowner education and outreach program and create a computerized inventory containing results of voluntary inspections. The town participates in the CSSLP.